MACHINE SR_M0
SEES SR0_Path
VARIABLES

Route_Req
Route_Cel
Route_Occ
Route2Path

INVARIANTS

inv1: $Route\_Req \subseteq ROUTE$
inv2: $Route\_Cel \subseteq ROUTE$
inv3: $Route\_Occ \subseteq ROUTE$
inv4: $Route2Path \in ROUTE \nrightarrow PATH$
inv5: $\forall r1, r2 \cdot (r1 \neq r2 \land r1 \in dom(Route2Path) \land r2 \in dom(Route2Path)) \Rightarrow (PathConflict^{-1}[Route2Path[\{r1\}]] \cap Route2Path[\{r2\}] = \varnothing)$
inv6: $\forall r \cdot r \in Route\_Occ \Rightarrow (Route2Path[\{r\}] \neq \varnothing)$

EVENTS
Initialisation

begin
act1: $Route\_Req := \varnothing$
act2: $Route\_Cel := \varnothing$
act3: $Route\_Occ := \varnothing$
act4: $Route2Path := \varnothing$
end

Event ATS_Request ⟨ordinary⟩ $\widehat{=}$

any
r
where
grd1: $r \notin Route\_Req$
then
act1: $Route\_Req := Route\_Req \cup \{r\}$
end

Event Route_Reserve ⟨ordinary⟩ $\widehat{=}$

any
r
where
grd1: $r \in Route\_Req$
grd2: $r \notin Route\_Cel$
grd3: $r \notin dom(Route2Path)$
grd4: $PathConflict[Route2InitPath[\{r\}]] \cap ran(Route2Path) = \varnothing$
then
act1: $Route2Path := Route2Path \cup \{r \mapsto Route2InitPath(r)\}$
end

Event Train_Enter ⟨ordinary⟩ $\widehat{=}$

any
r
where
grd1: $r \in dom(Route2Path)$
grd2: $r \notin Route\_Occ$
then
act1: $Route\_Occ := Route\_Occ \cup \{r\}$
end

Event Route_Sequential_Release ⟨ordinary⟩ $\widehat{=}$

any
r
cp
sp

where

grd1: $r \in Route\_Occ$
grd2: $r \in dom(Route2Path)$
grd3: $cp = Route2Path(r)$
grd4: $cp \neq NullPath$
grd5: $sp \in PathSub[\{cp\}]$

then

act1: $Route2Path(r) := sp$

end

Event Train_Leave ⟨ordinary⟩ $\widehat{=}$

any

r

where

grd1: $r \in Route\_Occ$
grd2: $r \in dom(Route2Path)$
grd3: $Route2Path(r) = NullPath$

then

act1: $Route\_Occ := Route\_Occ \setminus \{r\}$

end

Event Route_Release ⟨ordinary⟩ $\widehat{=}$

any

r

where

grd1: $r \in dom(Route2Path)$
grd2: $Route2Path(r) = NullPath$
grd3: $r \notin Route\_Occ$

then

act1: $Route2Path := \{r\} \lhd Route2Path$
act2: $Route\_Req := Route\_Req \setminus \{r\}$

end

Event ATS_Cancel ⟨ordinary⟩ $\widehat{=}$

any

r

where

grd1: $r \in Route\_Req$

then

act1: $Route\_Cel := Route\_Cel \cup \{r\}$

end

Event Route_Cancel ⟨ordinary⟩ $\widehat{=}$

any

r

where

grd1: $r \in Route\_Req$
grd2: $r \in Route\_Cel$
grd3: $r \notin Route\_Occ$
grd4: $r \in dom(Route2Path)$

then

act1: $Route\_Req := Route\_Req \setminus \{r\}$
act2: $Route\_Cel := Route\_Cel \setminus \{r\}$
act3: $Route2Path := \{r\} \lhd Route2Path$

end

END